Pain originating from facet joints is one of the most frequent causes of axial pain. Lumbar and cervical regions are the areas that facet joint problems and related pain are seen most frequently.

**Lumbar Facet Joint Pain**

Pain originating from lumbar facet joints is a frequent cause of low back pain in adults. Golthwaite first described it in 1911. Ghormley first coined the term facet syndrome in 1933. It is the cause of pain in 5-15% of the patients with low back pain. Incidence increases with the increasing age. Spondylolisthesis or lysthesis, and degenerating disc disease are predisposing factors for facet syndrome. In general, it originates from repeating stress and/or cumulative low-level traumas. Rarely, it is caused by a special traumatic incident. Repeating or cumulative stress causes inflammation, fluid accumulation within the joint and tensioning of the capsule, and therefore pain. Inflammation surrounding the joint can cause narrowing of the neural foramen, irritation of the spinal root and radicular pain.

Patients with pain related to lumbar facet joint complain from axial low back pain. Pain can be mono-lateral or bilateral. Pain can radiate to the side of the hip, lateral of thigh or posterior of the thigh based on the level that the problem is located in. Radiation to the distal of the knee is not expected in this condition.

There is no specific physical examination finding. Pain can be provoked by creating stress on the joint with bending forward, backwards or laterally. Palpation of the surrounding of the joint can be painful. Reducing of the pain in supine position is expected.

Among the radiologic diagnostic methods, the one that displays the facet joint degeneration best is the computerized tomography. Although MRI is capable of showing the inflammation in the joint, it can be insufficient in showing the osteosis structures. There are studies with computerized tomography that report the prevalence of the facet joint degeneration up to 80% in cases with low back pain. Clinical findings and radiologic findings are not always correlated with each other.

Lack of any specific history, physical examination findings or radiological study findings in pains related to lumbar facet joints causes difficulties in making the diagnosis and increases the importance of differential diagnosis particularly. After eliminating the so-called “red flag” conditions that are severe pathological conditions causing low back pain, it must also be kept in mind for the differential diagnosis that sacroiliac joint pathologies, discogenic pain and myofascial pain also can cause similar findings. Apart from these, the potential causes of the facet joint pathology including ankylosing spondylitis or rheumatoid arthritis must not be overlooked.

The most commonly used method for differential diagnosis is the use of the diagnostic block. Diagnostic block can be made with intra-articular local anesthetic injection or medial branch blockade. Both can give false-positive or false-negative results. False-positive results are reported as about 30%. Placebo
effect, using sedation when making the block, infil-
tration of the local anesthetic given to the surround-
ing tissues and inhibiting the pain originating from
other structures are the main causes of the false-pos-
itive results. It has been shown that even the 0.5 ml
local anesthetic given during the diagnostic block
can spread within an area of 5-6 cm². With this
reason, the volume of the local anesthetic used in
the diagnostic block must be kept as small as pos-
sible (0.2-0.4 ml). Although false-negative results are
not as frequent as false-positives, they can be seen
in about 10%. The reasons for this can include the
aberrant innervations of the joint, intravascular in-
jections, and inability of the patient to discriminate
between the procedural pain and the pain related
to the facet joint. I believe that the greatest reason
for false-negative result is the misplaced needle. Per-
sons familiar with the radiologic anatomy having
adequate expertise on the procedure must always
perform this procedure under radiologic imaging
with meticulous care. Medial branch blockade is
preferred more since it does not damage the joint.
Since the facet joints are innervated from both lev-
els constituting the joint, medial branches of both
levels must be blocked for each joint.

To reduce the incidence of false-positive or false-
negative results, it is recommended to perform re-
peated blocks (2-3 times) and use local anesthet-
ics with different effect periods and to analyze the
correlation of the periods of analgesia created with
the block and the effective periods of the local an-
esthetics.

NSAIDs, muscle relax-
ants and anti-depressives
are used as the pharma-
cological treatment agents
in the treatment of the
pain related to lumbar
facet joints. Physical ther-
apy modalities, exercise,
manipulation methods
and psychological sup-
port methods constitute
the non-pharmacological
conservative treatment
methods. Scientific evi-
dences related to the ef-
cffectiveness of these meth-
ods are limited.

**Interventional Treatment Methods**

The treatment methods used for the facet joint pain
determined with diagnostic blocks include the in-
tra-articular steroid injection and medial branch ra-
dio frequency (RF) applications.

Intra-articular steroid injections are applied by
entering the intra-articular space under radiologic
imaging and injecting the steroid or steroid-local
anesthetic mixture. It is possible to make injections
in different volumes (1-8 ml). Although short-term
relief has been reported in controlled studies, there
are also studies that it is not very different from sa-
line. Traumatic effects of entering articular space
and making injections in high volumes is also spo-
ken of. Recently, there is a tendency to divert from
intra-articular injections. Interventional therapy is
developing in the direction of RF application to the
medial nerve.

Radiofrequency applications are made on the
joint or on the medial branch. The first applica-
tions were intra-articular and were made in 1970s.
However, the RF applications on the medial branch
(figure 1) are mostly preferred.

In their placebo-controlled study, van Kleef et al. obtained good results in about 12 months following
RF. The advantage of radiofrequency applications
to neurolysis methods performed using neurolytic
agents and other methods include the controlled le-
sions with limited areas and the possibility of lim-
iting the severity of the lesion through different
modes and temperature. Sedation can be applied to

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**Figure 1:** Lumbar facet medial branch RFT, oblique (A) and lateral (B) image.
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the patient in RF application before the intervention. This sedation must not reach a level to interrupt the communication with the patient or to prevent the response to motor stimuli applied before the intervention. Local anesthesia is given to the patient under mild sedation and the intervention is performed using the proper RF needles. After confirming the location with radiologic imaging, pain is provoked with sensory stimuli. Provocation of the pain under 0.5 V is valuable. Motor stimuli are performed later. Lack of radicular response to the motor stimulus is important for safety. After making all the confirmations, temperature exceeding 65 degrees will be applied for a period longer than 60 seconds. General practice among the clinicians is the application of a temperature between 65 and 80 degrees for 70-90 seconds. Another RF method introduced in the recent years is the Pulse RF application. In the Pulse RF application, lack of overt morphologic changes shown in the nerves, or their presence so minimal that comparison with the conventional application is not possible is the advantages related to safety. However, there are uncertainties and debates related to both application time and effectiveness. Conventional RF application is preferred more for the treatment of the pain related to facet joints. The medial branch RF applications must also be applied to both levels like in diagnostic blocks.

Complications

The most frequent complications in the diagnostic blocks are the temporary motor and sensory losses related to the infiltration of the local anesthetic to the surrounding tissues. Regional infections are seen very rarely.10

The most frequent complications in the RF applications are temporary (2-3 weeks) low back pain and localized burning sensation. Infection has not been reported. Limited motor weakness has been reported rarely.3

Conclusion

In cases with low back pain related to facet joints, conventional RF application on the medial branch is the method that effectiveness has been shown most commonly after the diagnostic blocks. The evidence level is 1B+ (positive recommendation).10 There are no sufficient evidences related to the effectiveness of the intra-articular injections for the facet joints. Evidence level: 2B± (can be applied for investigation purposes).10 Scarcity of the adverse effects and mildness of the existing ones are other important advantages of the medial branch RF applications.

Cervical Facet Joint Pain

The cervical facet joints are in the upper side of the list among the causes of neck pain. This rate ranges between 25 to 65% in the group of patients with neck pain. This rate is closer to the upper limit in patients who apply to pain clinics. This is valuable as an indicator that facet joint is a missed group among the causes of the neck pain.

The complaint of the patient is generally in the form of mono-lateral axial neck pain. It can radiate to the occipital area or back depending on the level of the facet pathology.

There are no specific physical examination findings. Extension and rotation can be painful. The area surrounding the facet joint is painful with palpation of the dorsal area.

Radiologic evaluation does not provide too valuable findings in the pain related to facet joints, but it can be important for differential diagnosis. Particularly, any cervical metastasis must always be kept in mind in patients with other supporting findings. Studies including computerized tomography and MRI become valuable in such cases. No correlation was found between the degeneration in the cervical region and the related pain and its severity.

Diagnostic blocks are valuable in the cervical region like in the lumbar facet joint pain. Facet joints are innervated with the medial branch of the dorsal ramus and this innervation comes from two levels between C3 and C7. Therefore, two levels must be blocked for each joint. To give an example, both C4 and C5 medial branches must be blocked for C4-C5 facet joint. Since it is not always technically possible to give the proper position to the facet joints in the cervical region, medial branch block with diagnostic purposes is the correct option in the cervical region.

Like in the lumbar region, false-positive or false-negative results are possible also in the cervical region. Therefore, multiple blocks are recommended.
However, the stress caused by interventions on the cervical region on the patients has given rise debate on the requirement of repeated injections. There are many who advocate that one diagnostic block will suffice. Relief more than 50% following the diagnostic block is considered as positive result.

It was not possible to show the effectiveness of any of the non-invasive methods other than the exercise therapy. Therefore, minimal invasive methods are needed in addition to the conservative treatment methods.

**Interventional Treatment Methods**

In contrast with the lumbar region, it has been shown for the diagnostic blocks repeated in the cervical region that relief for 14-16 weeks can be obtained.\(^7\) It can be suggested that this period will be longer with the addition of steroids. Together with this, considering the distress caused by the cervical injections in the patient, repeat is not recommended, even with intervals of 16 weeks.

The most preferred treatment method is the application of RF on the medial branch.\(^2\) (figure 2)

Relief for a period of 8 to 14 months is reported after the procedure. Three to four procedures have been described for the technique. There are not studies comparing these techniques.

**Complications**

The anatomically complex structure of the cervical region, the vascular richness of the region, the narrow space in the intervention area and closeness to the vascular and nerve tissues are intimidating as regards the potential complications. These include the vertebral artery injury and injections to the spinal chord or intrathecal direct injections. Together with this, the reported complications are rather few in number. Use of fluoroscopy is very important for safety. A case of tetraplegia has been reported in a facet injection performed without using fluoroscopy. Although rare, there are reports on infection and septic arthritis cases.

The most frequent adverse effects are the temporary rise in pain and the burning sensation following the procedure.

**Conclusion**

A portion of the neck pain cases that cannot be underrated is related to the facet joints. When the facet joints are determined as the origin of the pain, RF application on the medial branch is one of the treatment methods to be considered (level of evidence: 2C+).\(^8\)
References